

L 07091-67 EWT(m)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP6019007

SOURCE CODE: UR/0109/66/011/006/1151/1154

AUTHOR: Abdullayev, G. B.; Chelnokov, V. Ye.; Iskender-zade, Z. A.;
Dzhafarova, E. A.

54
77
B

ORG: none

TITLE: Effect of junction-metal-type impurities on lifetime of minority carriers
in n-Si

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1151-1154

TOPIC TAGS: carrier lifetime, semiconductor research, semiconductor carrier,
MINORITY CARRIER, PN JUNCTION, NICKEL, METAL DIFFUSION

ABSTRACT: The results are reported of an experimental study of the effect of Ni
on the lifetime of minority carriers contained in the n-base of Si p-n junctions
produced by the diffusion alloy process. The p-n junctions were prepared by
introducing Al into Si having $\rho = 20$ ohms-cm. Plots of hole lifetime vs.

Card 1/2

UDC: 539.299.52.011.25:621.315.592.2

L 07091-67

ACC NR: AP6019007

7
temperature and vs. injection level are shown, as are plots of hole lifetime vs. temperature measured (at a low injection level) with specimens that contained some Ta, W, and Ti. It is found that the introduction of Ni blunts the action of more efficient recombination centers having $\Delta E_c = 0.55$ ev. Ni atoms diffuse in Si and shield other impurity or dislocation centers. The authors wish to thank V. M. Tuchkevich for his attention to the work and his valuable comments. "Orig. art. has: 3 figures."

SUB CODE: 20, 09 / SUBM DATE: 11Aug65 / ORIG REF: 004 / OTH REF: 008

Card 2/2 *XC*

L 40362-66

ACC NR: AP6014257

SOURCE CODE: UR/0109/66/011/005/0958/0960

AUTHOR: Yevseyev, Yu. A.; Chelnokov, V. Ye.

ORG: none

TITLE: Branching of the input current into the collector region in a junction transistor

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 958-960

TOPIC TAGS: junction transistor, collector emitter junction

ABSTRACT: In some circuits the part of the input current that flows into the collector region may be rather large. Current distribution in a 3-layer structure with open collector circuit is shown. This structure is represented as a p-n-p-n structure, and this formula is set up for the branched-into-collector current:

$I_c = I_{c,p} + I_{c,n} + I_{k0}$. Here, α_n and α_p are the current gains in a common-base circuit of the theoretical $p_2-n_2-p_1$ and $n_1-p_1-n_2$ transistors, respectively; I_{k0} is the reverse current of a part of the collector junction. The input-current derivation into the collector region can be used in some transistors, such as 4-layer and 5-layer structures. I-V characteristics of an experimental device are shown. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 09 / SUBM DATE: 31May65 / ORIG REF: 002
Card 1/1hs

UDC: 621.382.333.33.01

ACC NR: AP6023882

SOURCE CODE: UR/0109/66/011/007/1336/1337

AUTHOR: Abdullayev, G. B.; Dzhafarova, E. A.; Badalov, A. Z.;
Iskender-zade, Z. A.; Chelnokov, V. Ye.

ORG: none

TITLE: Reactive properties of reverse-biased silicon p-n junctions

SOURCE: Radiotekhnika i elektronika, v. 11, no. 7, 1966, 1336-1337

TOPIC TAGS: semiconductor device, pn junction

ABSTRACT: The reactive properties of low-volt (6 v breakdown) p-n junctions made from n-Si with a resistivity of 0.03-0.05 ohm·cm were investigated. Measurements were made at temperatures of -196-130C and at frequencies of 0.4-600 kc. Plots of junction capacitance vs. reverse bias at room temperature, for 5-100-200-400-600-kc, are shown. In the far-from-breakdown region, the

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UDC: 539.293.011.41

ACC NR: AP6023882

capacitance is independent of the small-signal frequency and decreases when the bias voltage increases, approximately as $C = U_{rg}^{-\frac{1}{2}}$. In the breakdown region, at lower frequencies, the capacitance rapidly increases with the bias voltage; at higher frequencies, the capacitance drops to zero and turns into inductance. A physical explanation is offered. Orig. art. has: 1 figure.

SUB CODE: 09 / SUBM DATE: 01Apr65 / ORIG REF: 003

Card 2/2

L 45215-66 EWT(1)/T IJP(c) AT

ACC NR: AP6027237

SOURCE CODE: UR/0109/66/011/008/1458/1466

AUTHOR: Lebedev, An, A.; Uvarov, A. I.; Chelnokov, V. Ye.

ORG: none

TITLE: Transient response of a p-n-p-n junction

SOURCE: Radiotekhnika i elektronika, v. 11, no. 8, 1966, 1458-1466

TOPIC TAGS: pn junction, transient response, transistor, switching transient, transient

ABSTRACT: The transient occurring during switching of a p-n-p-n junction is investigated. Using continuity equations, expressions describing the distribution of concentrations of nonequilibrium carriers in the base regions are obtained. An expression is obtained for the minimum delay time during switching of a four-layer system. It is shown that with the lapse of delay time the increment of current through the sandwich system is described by an exponential law. A comparative analysis is made of the transient response of switching of a p-n-p-n junction and a

Card 1/2

L 45215-66

ACC NR: AP6027237

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transistor in a common emitter circuit. The results obtained can be used for evaluating the switching front of controlled rectifiers.

[DW]

SUB CODE: 09/ SUBM DATE: 08Mar65/' ORIG REF: 003/ OTH REF: 004/

2/2 hs

I. 38192-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG
ACC NF AP6023613 SOURCE CODE: UR/0105/66/000/007/0056/0059

AUTHOR: Volle, V. M.; Grekhov, I. V.; Kryukova, N. N.; Tuchkevich, V. M.;
Chelnokov, V. Ye.; Shuman, V. B.; Yakivchik, N. I.

ORG: Leningrad Physicotechnical Institute im. Ioffe, AN SSSR (Leningradskiy fiziko-
tekhnicheskii institut. AN SSSR)

TITLE: VKDL-type diffused silicon avalanche power rectifiers

SOURCE: Elektrichestvo, no. 7, 1966, 56-59

TOPIC TAGS: semiconductor rectifier, silicon controlled rectifier

ABSTRACT: The development is reported of new types of diffused silicon power rectifiers. The rectifiers, which can be operated safely under high peak inverse voltages, differ from conventional diffused silicon rectifiers in that, due to special preparation of the p-n junction, the possibility of local electric breakdown at the intersection of the p-n junction with the surface is eliminated. Therefore, under peak inverse voltages, the process of avalanche breakdown takes place in the central section of the junction, while large power is dissipated in the inverse direction. In 1964, the Leningrad Physicotechnical Institute im. Ioffe, AS USSR, in cooperation with the "Elektrovypryamitel" Plant developed a series of such rectifiers bearing the designations VKDL-100, VKDL-200 and VKDL-350 for 100, 200, and 350 amp, respectively, and an 800-v operating voltage. The rectifying element of these devices is in the

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UDC: 621.382.3

ACC NR: AP6023613

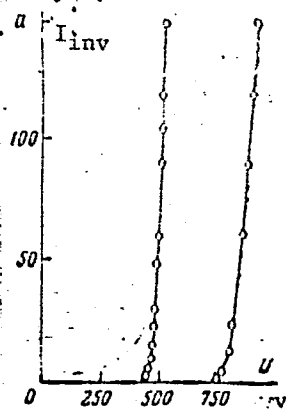


Fig. 1. Voltage-inverse current characteristic of the VKDL rectifiers

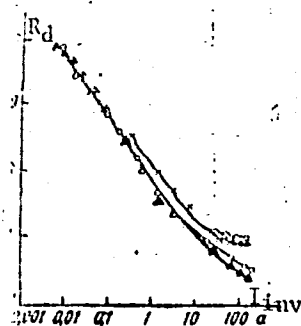


Fig. 2. Dependence of the dynamic resistance of the VKDL rectifiers on the inverse current

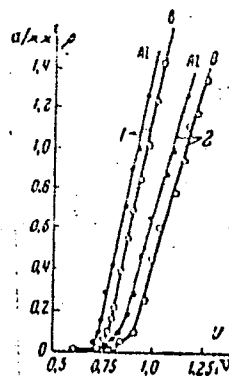


Fig. 3. Voltage-forward current characteristic of p-n junctions

form. of a 25-mm silicon plate with a p-n-n⁺ type conductivity. Two thermally compensating tungsten disks are pressed against the plate. A method of planar guard ring construction, described elsewhere (Haitz, R. M., A. Goetzberger, R. M. Scarlett,

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L 38192-66

ACC NR: AP6023613

and W. J. Shockley, J. Appl. Phys., v. 34, 1963), was used to eliminate the possibility of surface breakdown. The p-n junctions were made by the method of phosphorus boron and aluminum diffusion. The boron p-n junction was 18 mm in diameter with a planar guard ring 2 mm wide. The thickness in the diffused layer in the central section of the silicon plate was 60—80 μ , and in the region of the guard ring, 120—160 μ . The thickness of the diffused layer formed by phosphorus on the side of the base contact was 20 μ . Typical voltage-inverse current characteristics of the rectifiers in the breakdown region at 500 and 800 v are shown in Fig. 1. The characteristics correspond to the central p-n junction. The breakdown voltage of the p-n junction in the guard ring exceeds that of the central p-n junction by 250—600 v depending on the initial silicon resistance. Dependence of the dynamic resistance of avalanche rectifiers on inverse current is shown in Fig. 2, and the voltage-forward current characteristic in Fig. 3. With respect to the forward voltage drop, the above devices are divided into three groups: those with a 0.4—0.5, 0.5—0.6, and 0.6—0.7 v forward voltage drop for a nominal current. The inverse current under nominal conditions for all rectifiers does not exceed 5 ma. The lifetime of the avalanche rectifiers is up to 25,000 hr. The number of thermal cycles ranging from -50 to +140C should not exceed 5000 during the entire lifetime. The rectifiers can be connected either in series or in parallel. When connected in parallel, they should have equal forward voltage drops. Orig. art. has: 1 table and 8 figures. [JR]

SUB CODE: 09/ SUBM DATE: 10May65/ ORIG REF: 003/ OTH REF: 001/ ATD PRESS:

Card 3/3

ACC NR: AP7006046

SOURCE CODE: UR/0109/66/011/010/1856/1864

AUTHOR: Grekhov, I. V.; Liniychuk, I. A.; Chelnokov, V. Ye.; Shuman, V. B.

ORG: none

TITLE: Influence of space charge layer on volt-ampere characteristic of multi-stratal diffusion structures in silicon

SOURCE: Radiotekhnika i elektronika, v. 11, no. 10, 1966, 1856-1864

TOPIC TAGS: volt ampere characteristic, pn junction

ABSTRACT: Results are presented from calculation of the dependence of width of space charge layer in diffusion silicon pn junctions on the applied voltage for certain practically interesting cases (with low additive concentration gradient in junction). Calculations were performed on the BESM-2 computer. Experimental data are presented on the investigation of the volt-ampere characteristic of diffusion p-n junctions; the data is compared with calculated data. Calculations and experiment are in good agreement. Thus, the calculated dependences can be used in planning diffusion multi-stratal structures. The authors thank D. I. Kurakina for help in the experimental work. Orig. art. has: 9 figures and 11 formulas. [JPRS: 39,568]

SUB CODE: 09

Card 1/1

09270840

ACC NR: AP6033255

SOURCE CODE: UR/0109/66/011/010/1781/1788

AUTHOR: Grekhov, I. V.; Kryukova, N. N.; Chelnokov, V. Ye.

ORG: none

TITLE: Investigation of characteristics of silicon p-n junctions with controlled avalanche

SOURCE: Radiotekhnika i elektronika, v. 11, no. 10, 1966, 1781-1788

SOURCE: Radiotekhnika i elektronika, v. 11, no. 10, 1966, 1781-1788

TOPIC TAGS: pn junction, silicon diode, avalanche diode

TOPIC TAGS: pn junction, silicon diode, avalanche diode

ABSTRACT:

ABSTRACT: As the diffusion coefficient of Al at 1320C is higher by one order of magnitude than that of B, the breakdown voltage of a diffused-Al silicon specimen is much higher than that of a diffused -B specimen (experimental curves shown). Reverse-current I-V characteristics were measured in silicon p-n junctions equipped with (diffused-Al) guard rings, at 18-140C. Specimens with breakdown

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AGC NR: AP6033255

voltages of 440 and 770 v had resistivities of 5.5 and 15 ohms-cm, respectively. These controlled-avalanche junctions could withstand high short-time reverse voltages (heavy reverse currents). The p-n junctions suffered breakdown much earlier than surface breakdown would take place. The breakdown holes of 0.3-0.8-mm diameter occurred in the central (diffused-B) part of the specimens. The knockout energy is roughly constant which is seen from an experimental breakdown-power vs. pulse-duration plot. By using rippled d-c voltage and a cathode-ray oscillograph, the breakdown of individual microplasma was observed. Orig. art. has: 7 figures, 5 formulas, and 2 tables.

SUB CODE: 09 / SUBM DATE: 27May65 / ORIG REF: 002 / OTH REF: 004

Card 2/2

ACC NR: AP7004902

(N)

SOURCE CODE: UR/0109/66/011/012/2217/2219

AUTHOR: Chelnokov, V. Ye.; Shuman, V. B.; Yakivchik, N. I.

ORG: none

TITLE: Study of the switching process of silicon p-n-p-n structures

SOURCE: Radiotekhnika i elektronika, v. 11, no. 12, 1966, 2217-2219

TOPIC TAGS: silicon semiconductor, semiconductor device, *PN JUNCTION*, *SILICON SEMICONDUCTOR*, *PN JUNCTION*, *PULSE AMPLITUDE*, *PULSE DURATION MODULATION*

ABSTRACT: The switching-on time of p-n-p-n structures with large surface areas ($\sim 3 \text{ cm}^2$) made by doping n-type silicon plates (diameter, 2.5 mm) with aluminum and phosphorus is studied experimentally. This time was divided into three parts: delay time τ_d required for the anode voltage to decrease to $0.9 V_A$ (where V_A is applied voltage to the anode); front time τ_f required for the anode voltage to fall from $0.9 V_A$ to $0.1 V_A$; and the settling time τ_s required for the anode voltage to drop from $0.1 V_A$ to a value determined by the semiconductor structure. These times were studied as functions of amplitudes and time durations of square-wave pulses applied to the anode and control base (V_A and V_C) and of the hole lifetime in the thick base. The square wave pulses V_A had amplitudes between 20 and 125 v, durations of 50 to 150 μsec , and a frequency of 50 cps. The V_C pulses had the same frequency as those applied to the anode, but were shifted in time; their current and time duration was varied between 10 and 300 ma and 1 and 125 μsec . A resistive 6-ohm load was used in

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UDC: 539.2

ACC NR: AP7004902

the study. In order to decrease the switch-on time of the p-n-p-n structure (i.e., $\tau_f + \tau_s$) it is necessary to increase the hole lifetime in the thick base of the structure. Orig. art. has: 4 figures. [IV]

SUB CODE: 09/ SUBM DATE: 08 May 65/ OTH REF: 001/ SOV REF: 003

Card 2/2

ACC NR: AF7005830

SOURCE CODE: UR/0181/66/002/012/3474/3479

AUTHOR: Grekhov, I. V.; Kryukova, N. N.; Chelnokov, V. Ye.

ORG: Physicotechnical Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-
tekhnicheskii institut AN SSSR)

TITLE: Microplasma phenomena in silicon

SOURCE: Fizika tverdogo tela, v. 3, no. 12, 1966, 3474-3479

TOPIC TAGS: silicon, semiconductor plasma, pn junction, surface property, volt
ampere characteristic, dielectric breakdown

ABSTRACT: This is a continuation of earlier work on deep lying p-n junctions (Radio-
tekhnika i elektronika v. 9, 56, 1966) and deals with microplasma phenomena occurring
in cascade breakdown of deep p-n junctions prepared by diffusion of boron in n-type
silicon. Most earlier investigations were limited to microplasmas produced at the
emergence of the p-n junction to the surface. The present investigation deals with
junctions that have a large depth (40 - 100 μ). Since the radiation from the micro-
plasma is practically absorbed by the silicon, the data on the microplasma deforma-
tion was obtained by studying the character of breakdown of a large number of cascade
microdiodes prepared on a single silicon plate by photolithography. Protection
against surface breakdown was afforded by a guard ring. The junctions were prepared
by a procedure described by the authors earlier (Elektrichestvo v. 7, 56, 1966). By
studying the oscillogram of the inverse volt-ampere characteristic of the diode

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ACC NR: AF7005830

during the breakdown it was possible to determine the distribution of the microplasmas over the area of the junction, the volt-ampere characteristic, the variation of the microplasma temperature with current, and the geometric dimensions of the microplasma. The results show that the microplasmas are distributed quite uniformly over the area of the junction. Their number can be quite large, and the breakdown voltage can differ greatly from junction to junction. The breakdown volt-ampere characteristic can be approximated by an exponential function. The calculated geometrical dimensions of the microplasma were found to agree well with the experimental data. Orig. art. has: 4 figures, 8 formulas, and 1 table.

SUB CODE: 20/09/ SUBM DATE: 19Feb66/ ORIG REF: 003/ OTH REF: 008

Card 2/2

ZUBKOV, I.K., inzh.; CHELNOV, Ye.I., inzh.

Experimental apartment house built of rolled panels in the city
of Kolpino. Biul. tekhn. inform. 5 no.3:3-7 Mr '59.

(MIRA 12:7)

(Kolpino--Apartment houses) (Concrete slabs)

KIRILLOV, A.Ya., inzh.; CHELNOKOV, Ye.L., inzh.

Soundproofing of large-panel apartment houses. Biul.
tekh.inform.po stroi. 5 no.10:12-13 0 '59. (MIRA 13:3)
(Architectural acoustics) (Leningrad--Apartment houses)

VASIL'YEV, A., arkhitektor; ZUBKOV, I., inzh.; CHERNOKOV, Ye. I. inzh.

Apartment houses built of vibrorolled panels. Zhil.stroi. no.7:
2-5 JI '60. (MIRA 13:7)
(Kolpino--Apartment houses)
(Concrete slabs)

CHELNOKOVA, A.A., KOMAROVA, V.S.

Clinical radiographic observations of the state of the kidneys
following removal of the bladder in cases of cancer. Vest.rent.
1 rad. 33 no.3:68 My-Je '58 (MIRA 11:8)

1. Iz kafedry gosspital'noy khirurgii (zav. - prof. A.N. Spiridonov)
Saratovskogo meditsinskogo instituta.

(KIDNEYS)

(BLADDER--SURGERY)

CHELNOKOVA, A.A., DAVYDOVA, N.N.

Lipoma of the cecum causing intestinal invagination. *Khirurgiia*
34 no.7:119-120 J1 '58 (MIRA 11:9)

1. Iz kafedry rentgenologii i radiologii (zav. - prof. V.N. Shtern)
Saratovskogo meditsinskogo instituta i 1-y klinicheskoy bol'nitsy
imeni Lenina (glavnyy vrach P.N. Filippenko).

(CECUM, neoplasms

lipoma causing intussusception, surg. (Rus))

(INTUSSUSCEPTION, etiology & pathogenesis

lipoma of cecum, surg. (Rus))

(LIPOMA, case reports

cecum, causing intussusception (Rus))

CHELNOKOVA, A.A.; YAMPOL'SKAYA, M.Ya.

Nephrogenic pulmonary edema; clinical X-ray observation.
Klin.med. 36 no.12:114-117 D '58. (MIRA 12:6)

1. Iz kafedry rentgenologii radiologii Saratovskogo meditsinskogo instituta (dir. - dots. B.A.Nikitin) i I. Klinicheskoy bol'nitsy imeni V.I.Lenina (glavnyy vrach P.N.Filippenko).

(PULMONARY EDEMA, etiol. & pathogen.

nephritis (Rus))

(NEPHRITIS, compl.

pulm. edema (Rus))

GHELNOKOVA, A.A.; MORRISON, Z.N. (Saratov)

Diagnosis of subacute phlegmon of the stomach. Klin.med. 37 no.11:
119-121 N '59. (MIRA 13:3)

1. Iz kafedry rentgenologii i radiologii (zaveduyushchiy - prof. V.N. Shtern) Saratovskogo meditsinskogo instituta (direktor - dotsent B.A. Nikitin) i pervoy klinicheskoy bol'nitsy imeni V.I. Lenina (glavnyy vrach P.N. Filippenko).

(STOMACH diseases)

(PHLEGMON diagnosis)

CHELNOKOVA, A.A.

Marble disease. Ortop., travm.i protes. 21 no.1:18-21 Ja '60.
(MIRA 13:12)

(BONES—DISEASES)

PROTOPOPOV, A.N.; CHELNOKOVA, A.A.

Bronchial calculus following rupture of a caseous-fused lymphatic gland in the lumen of the bronchial tree in the adult. Probl. tub. 38 no.3:114-115 '60. (MIRA 14:5)

1. Iz kafedry rentgenologii i radiologii (zav. - prof. V.N.Shtern)
Saratovskogo meditsinskogo instituta (dir. - dotsent B.A.Nikitin).
(CALCULI) (LYMPHATICS--TUBERCULOSIS) (BRONCHI)

GAFT, Ya.M., kand.med.nauk; Prinimali uchastiye: BRANZBURG, N.A., vrach;
GOL'TS, I.P., vrach; GORELIK, Ye.S., vrach; ZVONKINA, O.M., vrach;
LIVSHITS, R.I., vrach; LUR'YE, Ye.L., vrach; OZHE, N.B., vrach;
RYBAL'SKAYA, V.G., vrach; CHELNOKOVA, A.K., vrach; YAVORSKIY, A.V.,
vrach

Dynamics of the tuberculous process in patients transferred to the
third group of dispensary registration. Probl. tub. 38 no.3:3-8
'60. (MIRA 14:5)

1. Iz protivotuberkuleznogo dispansera No.4 Moskvyy (glavnyy vrach -
zasluzhennyy vrach RSFSR S.M.Zamukhovskiy).
(TUBERCULOSIS)

CHELNOKOVA, G. N.

RAFIKOV, S. R., KORSHAK, V. V., ~~CHELNOKOVA~~^K. G. N.

"Reaction of Glycols and Dibasic Acids," Dok. AN, 57, No. 4, 1947

CHELNOKOVA, G. N.

S. R. Rafikov, V. V. Korshak and G. N. Chelnokova, Investigations in the field of multi-molecular compounds. Article XVII. The distribution of polyethers according to molecular weight. P. 642.

The reaction of polycondensation of adipic acid with glycols is investigated. The resulting polyethers have been divided into fractions, their molecular weight determined by chemical and viscometrical methods. The data are used for the discussion of the mechanism of the reaction of linear polycondensation.

Inst. of Organic Chemistry of the
Acad. of Sci. USSR
July 19, 1947

SO: Bulletin of the U.S.S.R. Academy of Sciences (Chemistry Series)
Izvestia Akad. Nauk, S.S.S.R., No. 6, 1948.

CHELNOKOVA, G. N.

USSR/Chemistry - Molecular Weights,
Calculation of Average
Chemistry - Polymers, Molecular Weights of

Jan/Feb 49

"Study in the Field of Compounds of High Molecular Weight: XVIII, Average Molecular Weights of Polymer Homologues," S. R. Rafikov, V. V. Korshak, G. N. Chelnokova, Inst Org Chem, Acad Sci USSR, 6 pp

"Is Ak Nauk SSSR, Otdel Khim Nauk" No 1

Considers influence the degree of polydispersion in compounds of high molecular weight has on average molecular weight, which is determined by various chemical and physicochemical methods. Introduces method of theoretical determination of average molecular weight, correctness of which is confirmed by investigating synthetic mixtures of polyesters. Introduces concept of a coefficient of polydispersion, by which the product may be determined. Shows graphic method of expressing the coefficient of polydispersion. Considers possibility of using this method to evaluate the mechanism of reaction. Submitted 20 Nov 47.

PA 27/49T22

CA CHELNOKOVA, N.N.

2

High-molecular-weight compounds. XIX. Determination of mean molecular weight of polymers by the end groups. G. N. Chelnokova, S. R. Radkov, and V. V. Karavak. *Izv. Akad. Nauk S.S.S.R., Otdel Khim. Nauk* 1969, 226-11; cf. *C.A.* 63, 6578d. — The mean mol. wt. values of polymers found from equivalent. acids of adipic acid and HOCH₂CH₂OH detd. by carbonyl group titration check the results obtained cryoscopically or viscometrically. Mol. wts. obtained by acetylation of OH groups are substantially higher, since the low-mol.-wt. fractions remain in soln. in the procedure used: the sample in pyridine was let stand 3 days in presence of 10-fold excess of 1:1 Ac₂O-pyridine, quenched with H₂O and the ice, the sepd. Ac deriv. washed with H₂O, dried and the Ac detn. made by saponification with NaOH-EtOH (3 hrs. at 100°). The divergence on samples with av. mol. wts. 1200 to 3200 was 20% or higher in many cases. Viscometric detns. used the standard Staudinger formula in CH₂ soln.; cryoscopic detns. were made in dioxane; COH detns. were made by direct titration by 0.05 N NaOH in 60% MeOH with phenolphthalein indicator. MeOH-CHCl₃ solns. of the samples being used.

G. M. Kosolapoff

CHELNOKOVA, G. N.

PROCESSES AND PROPERTIES INDEX

2

Kinetics of the polyamidation reaction. G. N. Chelnokova, A. R. Rakhov, and V. V. Korshak. *Doklady Akad. Nauk S.S.S.R.* 64, 888-4 (1960).—The reaction between sebacoic acid and hexamethylenediamine, in *m*-cresol soln. (1:1 by wt. to the amine sebacoate), resulting in the formation of polyamides of linear structure, according to $2H_2N(CH_2)_6NH_2 + nHOOC(CH_2)_4COOH \rightarrow H[(H_2N(CH_2)_6NH_2)_n(OOC(CH_2)_4COO)]_n + (2n-1)H_2O$, followed by titration of NH_2 groups with 0.1 *N* cresolsulfonic acid in $CHCl_3$ + *m*-cresol (1:1) with cresol red as indicator, is of the 2nd order, with the rate const. $k = 0.0080, 0.0087, 0.0192, 0.0121, 0.0082, 0.0018$ min⁻¹/g², at 155, 175, 167, 160, 145, 140°, resp. The mol. wts. of the product are, resp., 5300, 4100, 2300, 1900, 720, 300. Only at higher temps. does k obey the Arrhenius equation; the deviation below 100° is probably due to increased viscosity. In the range of validity of the Arrhenius equation, the activation energy = 24.0 kcal./mole. The temp. coeffs. between 145-55°, 165-75°, and 175-95° are, resp., 2.78, 1.91, and 1.78. At 145°, $ZnCl_2$ and H_3PO_4 have only an insignificant accelerating effect. N. Thou

458-514 METALLURGICAL LITERATURE CLASSIFICATION

EDON SYNDICATE

EDON SYNDICATE

EDON SYNDICATE

CHELNOKOVA, G. N.

PA 27/49T7

USSR/Chemistry - Amides, Formation
Chemistry - Hydrolysis

Jan 49

"The Kinetics of Amide Formation and Hydrolysis,"
G. N. Chelnokova, S. R. Rafikov, V. V. Korshak, 3 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 3

Kinetic study of the reaction of sebacic acid with
hexamethylenediamine under varying conditions (tem-
perature and catalysis). Submitted 8 Oct 48.

27/49T7

CHELNOKOVA, G. N.

"Study of the Mechanism of Reactions of dicarboxylic Acids With Glycols, Diamines, and Monoethanolamine." Sub 24 May 51, Inst of Organic Chemistry, Acad Sci USSR.

Dissertations presented for science and engineering degrees in Moscow during 1951.

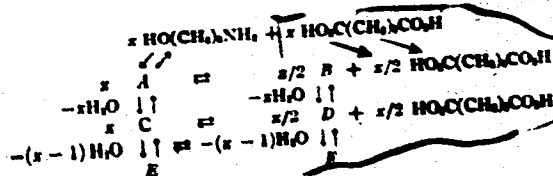
SO: Sum. No. 480, 9 May 55

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CHELNOKOVA, G.N.

Rate of exchange reactions in the polycondensation process. V. V. Korshak, G. N. Chichakova, and G. I. Dedyukina. *Sov. Chem. Abstr.* 34: 1008 (1952).—In the polycondensation of sebacic acid (I) with urethane diamine (II) and with *N,N'*-bis(3-hydroxyethyl)urethane (III), exchange reactions should give rise to the same product in both instances, namely a polyamide ester of regular structure (a) $(-\text{NHCH}_2\text{CH}_2\text{COO}(\text{CH}_2)_8\text{CO}-)_n$. In the absence of (a) $(-\text{NHCH}_2\text{CH}_2\text{COO}(\text{CH}_2)_8\text{CO}-)_n$ I with II should produce the exchange polycondensation of I with II should produce the regular chain a, but the product of the structure (b) $(-\text{CO}-\text{CH}_2\text{CH}_2\text{CONHCH}_2\text{CH}_2\text{CO}-)_n$ should be an irregular chain of the structure (c) $(\text{CH}_2)_8\text{COOCH}_2\text{CH}_2\text{NHCO}(\text{CH}_2)_8\text{CONHCH}_2\text{CH}_2\text{CO}-)_n$. Experiments, the 2 products were found to have the same pattern, and showed the same electron-diffraction pattern, consisting in un stretched films, of 8 rings, the 1st of which have the greatest intensity. The high no. of sharp rings, with only a faint inner diffuse ring, indicates a high degree of crystal order, with only a minor amt. of a less ordered phase. Max. of large angles are absent. Stretching changes the pattern in the sense of orientation of the mol. axes parallel to the direction of stretching, as against an orientation of the mol. axes almost perpendicular to the film plane in the unstretched state. The identity period, from the patterns of the stretched films, is 18.9 Å., in very good agreement with 17.2 Å. calcd. for the structure a; structure b would call for a calcd. period of 34.4 Å., which was not found. These results prove the occurrence of exchange processes in which each link is free to combine with others following the statistical probability of distribution of chain links. The "polycondensation equilibrium" in the instance of I + II, is compared of the reactions given by the scheme:

- Lab. Org. Synthesis



N. T. ...

High-molecular weight compounds. LV. Application of reactions of interchain exchange to processes of linear polycondensation. S. R. Rafikov, V. V. Korshak, and G. N. Chelnokova (Inst. Org. Chem. Acad. Sci. U.S.S.R., Moscow, *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk*, 1953, 743-50; cf. C.A. 48, 3912g, 8918e.—It was shown that the ester links in polyesters can undergo exchange reactions with free HO, CO₂H, or amino groups. The polyamide links are, however, broken only under the attack of amino or CO₂H groups, and are stable toward HO groups of alcs. Narrow fractions of polyesters undergo on heating an extensive change which results in a heterogeneous product whose mol. wt. and structure approaches that of the polyester formed by reaction of the glycol with the dicarboxylic acid (adipic). Heating 7.2 g. adipic acid with 17.4 g. (CH₂OH)₂ 9 hrs. at 180° gave 3.4 g. H₂O-glycol mixt., and the residue heated to 150°/2 mm. yielded 8 g. distillate, which taken up in EtOH and pptd. with H₂O, formed a waxy solid, m. 28-9°, whose mol. wt. was 232, corresponding to the diglycol ester of adipic acid. This heated 4 hrs. to 180°/10-12 mm. gave 1.7 g. distillate and yielded a colorless polyester, m. 38-40°, mol. wt. 1800. Heating di-Et adipate with (CH₂OH)₂ (equimolar amts.) yields polyesters with mol. wts. up to

1250, when 1% p-MeC₆H₄SO₃H or EtONa catalyst is used and the temp. is kept at 160-95° for 6-7 hrs.; di-Bu adipate reacts less rapidly. Heating di-Bu adipate with a slight excess of (CH₂)₆(NH₂)₂ 3 hrs. at 225-30° gave 1 g. BuOH and yielded a product, m. 190-200°, mol. wt. about 830, which was a polyamide contg. 3 diamine residues per 4 adipate units and 2 BuO groups; extd. with EtOH, it yielded an amorphous powder, m. 108-12°, mol. wt. 585-630. Heating equimolar amts. of adipic acid and AcNH(CH₂)₄NHAc 2 hrs. at 180-200° and 2 hrs. at 210-15° gave 0.25 g. AcOH and polyhexamethyleneadipamide, m. 242-5°, mol. wt. 2600. A similar reaction with di-Et adipate failed to take place even at 210° without a catalyst; in the presence of 0.1 g. p-MeC₆H₄SO₃H a polyamide, m. 244-7° was formed. Adipamide (14.4 g.) and 31 g. (CH₂OH)₂ heated 3 hrs. at 200° gave 14.1 g. initial diamide. The polyester from adipic acid and (CH₂OH)₂ was fractionally pptd. from C₆H₆ by petr. ether (distribution curve is shown); a narrow fraction, mol. wt. 1100, was heated in sealed tube 42 hrs. at 170°, and fractional optn. of the product gave a mol. wt. distribution that was very close to that of the initial heterogeneous polyester. LIX. Stereochemistry of α-methylstyrenes in connection with their ability to polymerize. V. V. Korshak and N. G. Matveeva. *Ibid.* 751-6.—Neither 2,6-(MeO)₂C₆H₃CMc:CH₂ (I) nor 2,6,4-Me₃(MeC)₃C₆H₃CMc:CH₂ (II) could be polymerized. This result is explained by steric hindrance by the 2-o-groups and the α-Me group. II could not be prepd. with RMgX but was prepd. with organo-Na compds. 2,6,4-Me₃(MeC)₃C₆H₃Ac (100 g.), 910 g. MeI, and 48 g. Na powder in Et₂O treated with 1 ml. EtOH to start the reaction, and, after the initial reaction, the mixt. refluxed 1 hr., kept overnight, and worked up in the conventional manner yielded 15.5% II, b_p 124-5°, d₄ 0.9458, n_D 1.5050, after distn. of the org. layer is removed. 2,8-(MeO)₂C₆H₃Ac with MeMgI similarly gave 47.6% I, b_p 130-8°, b_p 92-4°, m. 36-7°; d₄ 1.043. G. M. Kozolapoff]

CHELOKOVA, G. N.

U S S R .

✓ High-molecular-weight compounds. XLVIII. Kinetics of reaction of polycondensation of ethanolaniline with sebatic acid. G. N. Chelnokova and V. V. Korshak. *Sbornik Stat. Obshch. Khim.* 2, 1070-4 (1953); cf. C.A. 48, 2622d. — Heating equimolar mols. of $H_2NCH_2CH_2OH$ with $HO_2C(CH_2)_4CO_2H$ at 120°, 130°, 140°, 150°, and 160° was employed in the study of kinetics of polymer formation; the reaction was followed by titration of NH_2 and CO_2H groups. The former was done with 0.1N cresolsulfonic acid in a mixt. of cresol and $CHCl_3$, using cresol red indicator; the standardization of the soln. was made on a pure specimen of hexamethylenediamine adipate. The kinetic curves are reproduced. The reaction rate constant for the CO_2H groups was found to be: ($K \times 10^{-4}$ millimoles $^{-1}$ min. $^{-1}$ g. 3): at 120° 0.79, at 130° 1.2, at 140° 3.0, at 150° 4.8, and at 160° 14.0. The reaction rate consts. for the NH_2 groups are ($K \times 10^{-4}$ millimoles $^{-1}$ min. $^{-1}$ g. 3): at 120° 1.9, at 130° 2.4, at 140° 6.0, at 150° 18.0, and at 160° 29.0. Thus NH_2 groups react much more rapidly than do HO groups with CO_2H . The latter reaction is of 2nd-order with respect to HO and 3rd-order with respect to CO_2H groups. The order of reaction with respect to the NH_2 groups is undetd. since neither 1st- nor 2nd-order consts. are satisfactory. XLIX.

OVER

B. M. Kosolapoff

Peculiarities of reaction of ethanolamine with adipic acid and sebacic acid. G. N. Chelnokova, V. V. Korshak, and S. R. Rafilov. *Ibid.* 1976-80.---Condensation of 14.6 g. $\text{HO(CH}_2)_4\text{CO}_2\text{H}$ with 12.2 g. $\text{H}_2\text{NCH}_2\text{CH}_2\text{OH}$ in N 1 hr. at 150°, 2 hrs. at 160°, and 7 hrs. at 190° gave 88% completion of the reaction (by evolved H_2O), yielding a horny colorless solid, sol. in MeOH, EtOH, and H_2O . The product, $\text{C}_{16}\text{H}_{28}\text{O}_4\text{N}_2$, was identified as $\text{HO(CH}_2)_4\text{NHCO(CH}_2)_4\text{CONH(CH}_2)_4\text{OH}$, incapable of further reaction; pure product, m. 120° (from EtOH-Et₂O). Benzoylation with BzCl in aq. NaOH gave the di-Bz deriv., m. 141-2° (from C_6H_6). When the polycondensation was followed by titration of NH_2 and CO_2H groups it was found that at 180-90° the rate of reaction of NH_2 with CO_2H groups was 15 times greater than that of HO groups with CO_2H groups; at 119°, the ratio is only 2.8. Heating $\text{H}_2\text{N(CH}_2)_4\text{CO}_2\text{Et}$ 5 hrs. at 170-80° yielded EtOH and a polyamide with mol. wt. 3500, not described further. L. Mechanism of polycondensation of monoethanolamine with dicarboxylic acids. V. V. Korshak, G. N. Chelnokova, and G. I. Distler. *Ibid.* 1278-83; cf. C.A. 39, 4592.---Condensation of equimolar amts. of $\text{HOCH}_2\text{CH}_2\text{NH}_2$ with adipic and sebacic acids yields polyamidoesters (I) which are almost devoid of terminal NH_2 groups, and contain only HO and CO_2H terminal groups. Condensation of equimolar amts. of sebacic acid with $[(\text{CH}_2)_4\text{CONHCH}_2\text{CH}_2\text{OH}]_2$ gave polyamidoesters whose properties were identical with those of type I. X-ray study of both types showed periodicity of structure spaced along mol. axis at 16.9 Å., which corresponds to length of a $\text{O(CH}_2)_4\text{NHCO(CH}_2)_4\text{CO}$ u. Exchange of units of polymer chains must involve a considerable amt. of the products, each given pair of substances representing a dynamic equil.

G. M. Kosolapoff

CHELNOKOVA, G.N., KORSHAK, V.V., AND RAFIKOV, S.R.

From the Field of High Molecular Compounds. XLIX. Reaction Characteristics of Monoethylamine With Adipic and Sebacic Acids

Investigated the condensation reaction of monoethylamine with adipic acid in order to clarify the reaction mechanism and the intermediate products. Also investigated the condensation of the ethyl ester of epsilon-aminocaproic acid into a polymer. (RZhKhim, No. 1, 1955)
Sb. Statey po Obshch. Khimii. M.-L., Izd-vo AN SSSR, Vol 2 1953, 1075-1080

SO: Sum. No. 744, 8 Dec 55 - Supplementary Survey of Soviet Scientific Abstracts (17)

CHELNOKOVA, G. N.; KORSHAK, V. V. and DISTLER, G. I.

High Molecular Compounds, L. The Mechanism of Polycondensation of Monoethanol
Amine with Dicarboxylic Acids, page 1278, Sbornik Stat'ov po obshchey khimii
(Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953,
pages 1680-1686.

High-molecular weight compounds. LXXXVII. Mixed polyamides containing in their composition the residues of some amino acids. V. V. Korshak and T. M. Prunze (Inst. Heteroorg. Compds., Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 98-102; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 63-6 (Engl. translation); cf. *C.A.* 49, 12873i; 50, 11282g. Binary systems were examd., which were prepd. from mixed polyamides formed from ω -aminocanthric, ω -aminopelargonic, or ω -aminoundecanoic acids and from hexamethylenediamine salts of adipic, azelaic, and sebacic acids. The substances are colorless horny solids, which readily form fibers and are sol. in PhOH and mineral acids; the soly. and m.p. are directly related in this group. The m.ps. of the products are min. at about 0.6-0.8 mole fraction of the amino acid in the compn. The m.p.-compn. curves are shown graphically. Generally the m.ps. decline in accordance with the number of methylene groups in the chain of the starting materials. LXXXVIII. Polyamides containing ether links in the macromolecular chain. V. V. Korshak and G. N. Chelnokova. *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 103-7; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 97-100 (Engl. translation). $-O(CH_2CO_2H)_2$ and $(CH_2)_4(NH_2)_2$ form a salt, m. 165-6°. A similar salt was prepd. from p - $C_6H_4(CO_2H)_2$ and $(CH_2OCH_2CH_2)_2NH_2$, m. 208-9°; the corresponding salts were made from: adipic acid (I), m. 119-20°; azelaic acid, m. 114-15°; sebacic acid, m. 147-8°. These salts were converted by heating into polyamides, whose m.ps., resp., were: 75-8°, 236-40°, 175-80°, 127-30°, and 157-60°. The 1st was sol. in cresol and HCl and hot EtOH; the 2nd was sol. in HCl and cresol; the remaining ones were sol. in hot EtOH and slightly (over)

KORSHAK, V.V., FRUNZE, T.M., ...

in hot H_2O . Thus the ether link lowers the m.p. of the polyamide and raises the soly. The ether link is more effective in this manner when it is located in the acid residue rather than in the diamine. Copolymers were prepd. from caprolactam and I in various proportions; these solid horny substances also can form fibers on stretching in the cold state; the m.p. of the mixed product shows a min. at about 40 mole-% caprolactam. Mixed polyamides from I and hexamethylenediamine adipate were also studied; in this binary system the min. m.p. results at about 10% (mole) I. LXXXIX. Three-component systems of mixed polyamides including amino

acids. V. V. Korshak, T. M. Frunze, and T. A. Dikareva. *Izvest. Akad. Nauk. S.S.S.R., Otdel. Khim. Nauk* 1956, 109-13; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 101-105 (Engl. translation).—Ternary system diagrams are presented for mixed polyamides prepd. from combinations of ω -aminonaphthoic, ω -aminopelargonic, or ω -aminoundecanoic acids, and hexamethylenediamine salts of adipic, azelaic, or sebacic acids or caprolactam. The lowest m.ps. and highest soly. are found in products near the centers of the ternary diagrams. XC. Polycondensation of 1,2-dichloroethane with Tetralin. G. S. Kolesnikov, V. V. Korshak, M. A. Andreeva, and A. I. Kitagorodskii. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 114-19; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 107-111 (Engl. translation).—Polycondensation of $(CH_2Cl)_2$ with tetrahydronaphthalene in the presence of $AlCl_3$ was studied in mixts. of various compns. treated 4 hrs. at 100° . With excess Tetralin the yield of polymeric product is const. and independent of the proportion of other reactants; with excess $(CH_2Cl)_2$ the polymer yield declines. The polymer of max.

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mol. wt. is formed with 1.1/1.0 ratio of Tetralin to $(\text{CH}_2\text{Cl})_2$. The low mol. wt. product is 1,2-bis(2-tetralyl)ethane, m. 99-100°, b. 190-210° (crude). X-ray analysis of the material gave the following unit cell dimensions: a 13.35 Å., b 8.01 Å., c 7.97 Å., λ 101.15°; space group $P2_1$, $z = C_2$; $Z = 2$ per unit cell. No tridimensional polymer forms in this reaction. The polymeric product does not show assocn. in C_6H_6 until the soln. reaches about 10% concn. XCI. Transarylation of 1,2-diphenylethane at various temperatures. G. S. Kolesnikov and V. V. Korshak. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 232-8; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 223-7 (Engl. translation); cf. *C.A.* 46, 7527d. —Specimens of $(\text{PhCH}_2)_2$ were heated at const. temp. with AlCl_3 with stirring in N atm. and the amt. of evolved C_6H_6 detd. vs. time. The residual polyphenylethyl was isolated as usual. The results shown graphically indicate that in the temp. range 80-105° the transarylation reaction is 2nd-order with activation energy 11,400 cal. per mole. The chain growth of the polymer results both from interaction of the polymer mols. and from reaction of the monomer with a growing chain. The mol. wt. of the polymer increases with rising temp. as does the amt. of tridimensional product formed; the latter shows max. mol. wt. of about 15,000 at 150°. XCII. Effect of catalyst concentration on transarylation of 1,2-diphenylethane. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 239-42; *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 229-31 (Engl. translation). —Increase of concn. of AlCl_3 used in the reaction (cf. part XCI) results in gradually increasing yield of the polymer up to 13.6 mole-% AlCl_3 ; the rate of reaction rises linearly with concn. of AlCl_3 . The yield of tridimensional polymer rises with increased AlCl_3 concn. in

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KORSHAK, V.V., FRUNZE, T.M., ---

a series of expts. run at 140°. The mol. wt. of the polymer tends to rise with increased concn. of the catalyst. The tri-dimensional polymer forms primarily from the highest mol. wt. chains. XCIII. Properties of polyesters of tetramethylene glycol and 1,3-butanediol. V. V. Korshak and S. V. Vinogradova. *Zhur. Obshchei Khim.* 26, 539-44 (1956); cf. *C.A.* 50, 252af. Polyesters were prepd. from tetramethylene glycol or 1,3-butanediol with oxalic, malonic, succinic, adipic, glutaric, pimelic, azelaic, sebacic, and decanedicarboxylic acids. The polyesters from tetramethylene glycol were solids whose m.ps. showed the saw-tooth alternation; the oxalate, m. 103-5°, malonate, m. -20° to -24°, succinate, m. 113-14°, glutarate, m. 36-8°, adipate, m. 53-60°, azelaate, m. 38-41°, pimelate, m. 49-51°, sebacate, m. 64-7°. The polyesters of 1,3-butanediol were liquids with solidification temps. in the -1° to -48° range which also showed a similar alternation but which was less pronounced. The m.ps. of the polyester fractions from tetramethylene glycol do not show any appreciable variation with changed mol. wt. XCIV. Polyesters of trimethylene and pentamethylene glycols. *Ibid.* 544-8. Polyesters of $(CH_2)_3(OH)_2$ and $(CH_2)_5(OH)_2$ were prepd. with dicarboxylic acids from oxalic to decanedicarboxylic. These were low-melting solids, generally showing a rising m.p. past succinic acid ester; the esters with malonic acid were liquids, m. about -25°, which represented a singular min. The succinates melted above the glutarates. The polyesters from glycols with an odd no. of C atoms destroy the factor of even-odd sequence, beginning with glutarates, i.e. alternation of melting temp. and fluidity and soly. no longer exists.

G. M. Kosolapoff

4/4

CHELNOKOVA, G. N.

USSR/Chemistry - Molecular compounds

Card 1/1 Pub. 40 - 18/25

Authors : Kershak, V. V., and Chelnokova, G. N.

Title : High molecular compounds. Part 88. Polyamides having ether bonds in the macromolecule chain

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 103-107, Jan 1956

Abstract : The derivation of polyamides from diglycolic acid and hexamethylenediamine is described. Mixed polyamides were also obtained from ϵ -carbolactam and salts of di-(gamma-aminipropyl) ether of ethylene glycol with adipic acid and from salts of adipic acids with hexamethylenediamine at various ratios of the basic substance. It was established that the addition of ethereal oxygen to the polyamide macromolecule chain leads to a reduction in the melting point and to an increase in solubility in comparison with polyamides having no ether bonds. The properties of the polyamides are listed. Six references: 1 USA, 3 USSR, 1 Germ., and 1 Eng. (1905-1955). Tables; graphs.

Institution : Acad. of Sc., USSR, Inst. of Organoelemental Compounds

Submitted : August 18, 1954

KORSHAK, V.V.; CHELMOKOVA, G.N.; GRIBKOVA, P.N.

Heterochainⁿ polyamides. Part 11: Synthesis and study of polyamides containing sulfide and sulfonic sulfur in their chains.
Vysokom.sped. 1 no.2:208-214 F '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Amides) (Polymers)

RAFIKOV, S.R.; ~~CHELNOKOVA, G.N.~~; GRIKOVA, P.N.

Chemical conversions of polymers. Part 2: Polyoxymethylation of
polyamides. Vysokom. soed. 1 no.3:378-386 Mr '59.

(MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Amides)

SHEYN, T.I.; CHELNOKOVA, G.N.; VLASOVA, L.N.

New polyamide fiber based on thiodivaleric acid and hexamethylene-
diamine. Khim. volok. no.2:19-20 '59. (MIRA 12:9)

1..Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo
volokna i IREOS AN SSSR.

(Textile fibers, Synthetic)

5(3)

AUTHORS:

Korshak, V. V., Chelnokova, G. N., Shkolina, M. A.

SOV/62-59-5-26/40

TITLE:

Synthesis of the Poly-4-amino-1,2,4-triazoles (Sintez poli-4-amino-1,2,4-triazolov)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 5, pp 925-926 (USSR)

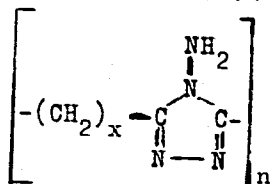
ABSTRACT:

In this paper the reaction of hydrazine with a number of dicarboxylic acids and their derivatives at a molar ratio of 2:1 was investigated with eucosane dicarboxylic acid, sebacic-, azelaic-, adipic-, glutaric-, succinic-, and thiodivalerianic acid. The substances obtained were investigated as to their thermomechanical and mechanical properties (Figs 1,2). A surplus of 90 mol % hydrazine was found to be the optimum quantity for the purpose of obtaining pure products with respect to the quantity of hydrazine necessary for the formation of the dihydrazide of the individual acids. The structure of the polytriazoles obtained on the basis of the investigations carried out is assumed to be the following:

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Synthesis of the Poly-4-amino-1,2,4-triazoles

SOV/62-59-5-26/40



where x = 2,3,4,7,8,20.

The presence of the amino group was proved. Besides, the hydrochloric- and sulfuric acid salts of **polyoctamethylene-amino-triazole** were produced and by acetylation with acetic anhydride from the polyaminotriazole of the sebacine-hydrazide also N-acetyl-aminotriazole. All products obtained are very stable, and they are not destroyed by boiling in hydrochloric acid and lye. As a film **polyoctamethylene-triazole** has a great tearing strength $\sim 850 \text{ kg/cm}^2$ (Fig 2). There are 2 figures.

ASSOCIATION:

Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED:
Card 2/2

September 9, 1958

5(3)

AUTHORS:

SOV/62-59-5-28/40

Korshak, V. V., Chelnokova, G. N., Shkolina, M. A.

TITLE:

On the Problem of the Formation Mechanism of Polyaminotriazoles
(Kvoprosu o mekhanizme obrazovaniya poliaminotriazolov)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 5, pp 929-931 (USSR)

ABSTRACT:

In a previous paper by the same authors (Ref 1) the polycondensation of various dicarboxylic acids with hydrazine was investigated; it was found that in the polycondensation of sebacic acid with hydrazine the nitrogen content of the dihydrazide obtained was somewhat lower than the theoretically calculated content. Agreement with theoretical calculation was obtained only by using a certain surplus of hydrazine. Reference is made to V. W. Fischer (Ref 2), who found it necessary to use the excess hydrazine in order to prevent the possible formation of polyhydrazides and polyoxadiazoles which is possible in this reaction. In connection herewith the polycondensation of hydrazine in the following dicarboxylic acids: sebacic acid, phthalic, isophthalic, and terephthalic acid was investigated in this paper. The characteristics of the salts

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On the Problem of the Formation Mechanism of Polyaminotriazoles

obtained are given in a table. On the one hand, the polycondensation with equimolar ratios hydrazine : dicarboxylic acid, where polyhydrazide was obtained, was investigated, and on the other, the molar ratio 2 (and more) : 1 resulted in polyaminotriazole by the application of pressure. The reaction scheme is assumed to be the following: First, the dihydrazide is formed immediately from the salt of the dicarboxylic acid and hydrazine. The dihydrazine can then be converted under pressure nearly quantitatively into an aminotriazole compound with separation of water. For the conversion of polyhydrazide into the aminotriazole ring an additional surplus of hydrazine is finally necessary. This surplus has a maximum. If the maximum is exceeded, this causes impurities due to polyhydrazide and its hydrolysis-products. Poly-4-amino-1,2,4-triazole is represented. There are 1 table and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: September 18, 1958
Card 2/2

PHASE I BOOK EXPLOITATION

International symposium on macromolecular chemistry. Moscow, 1960.

307/3934

Reshchunovskiy simpozium po makromolekulyarnoy khimii SSSR, Moskva, 14-18 iyunya 1960 g.; doklady i avtoreferaty. Khimicheskaya III. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18, 1960. Papers and Summaries) Section III. [Moscow, Izd-vo AN SSSR, 1960] 469 p. - 55,000 copies printed.

Techn. Ed.: P. S. Kashina.

Sponsoring Agency: The International Union of Pure and Applied Chemistry. Commission on Macromolecular Chemistry.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high molecular compounds.

COVERAGE: This is Section III of a multivolume work containing papers on macromolecular chemistry. The articles in general deal with the kinetics of polymerization reactions, the synthesis of special-purpose polymers, e.g., ion exchange resins, semiconducting polymers, etc., ion exchange polymerization reactions, properties and chemical interactions of high molecular materials, and the effects of various factors on polymerization and the degradation of high molecular compounds. No personalities are mentioned. References given follow the articles.

Shamoy, Kh. U., U. M. Mishev, and R. S. Tillyazov (USSR). The Radiation Method of Copolymerizing Acrylonitrile With Polystyrene and Perchlorovinyl.

Refikov, S. R., G. M. Chelnokova, I. V. Zhuravleva, and P. M. Gribkova (USSR). Oxethylation of Carbochain and Hetero-

Chain Polymers.

Santo, I., and I. Gil (Hungary). Grafting Methyl Methacrylate Onto Polys of Polyvinyl Alcohol.

Lazaf, M., R. Rado, and M. Porlincita (Czechoslovakia). Grafting Methyl Methacrylate Onto Polypropylene and Poly-

ethylene.

Tutoraki, I. A., Z. I. Selez, and V. M. Eyalov (USSR). The Interaction of Carboxyl-Containing Butadiene-Styrene Rubbers With Polyamides and ϵ -Caprolactam.

Kolantnikov, A. I., and Ts'eng Mau-ming (USSR). Synthesis of Source of Free Radicals on Crosslinking in Polyethylene.

Madonov, I. K., A. Tutoraki, and B. A. Dogudkin (USSR). On the Transformation of Carboxyl-Containing Butadiene-Styrene Rubbers and Their Mixtures With ϵ -Caprolactam Under the Action of Gamma Radiation.

Regovin, Z. A., V. A. Deravitskaya, Sun Tung, Chang Wei-

Yang, and L. S. Tai-Graych (USSR). Synthesis of New Cellulose Derivatives and Other Polysaccharides.

Yermolenko, I. K., and P. N. Kaputskiy (USSR). Initiation of the Controlled Synthesis of Modified Celluloses With Oxidation.

Yanov, V. I., M. Ya. Lenahina, V. S. Ivanova (USSR). Oxidation of Cellulose in Chains of Cellulose Molecules.

Berlin, A. A., Ye. A. Panskaya, and O. I. Volkova (USSR). Mechanicochemical Transformations and Block Copolymerization During the Freezing of Starch Solutions.

Vasnov, Kh. U., B. I. Avkhodzhayev, and H. Azizov (USSR). Modification of the Properties of Cellulose by Grafting.

344/3

S/190/62/004/011/003/014
B119/B186

AUTHORS: Rafikov, S. R., Chelnokova, G. N., Sorokina, R. A.
TITLE: Chemical reactions of polymers. VIII. Degradation of
polyhexamethylene adipamide at high temperatures
PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 11, 1962,
1639 - 1646

TEXT: Polyhexamethylene adipamide of molecular weight 23,500 was subjected to heat treatments at 350°C (in N₂ current) and at 380 and 400°C (in an autoclave and N₂ atmosphere) for several hours each, and the resulting decomposition products were investigated. At 350°C, a steric (three-dimensional) crosslinking of the polymer occurs with cleavage of NH₃ and CO₂. At 380°C and over, a primary hydrolytic cleavage of the amide bonds sets in, followed by a separation of CO₂, cyclopentanone, amines, and NH₃. The presence of CO and low hydrocarbons in the decomposition product points to an additional homolytic cleavage of the -CO-NH- bonds. The
Card 1/2

Chemical reactions of polymers...

S/190/62/004/011/003/014
B119/B186

hydrolysis of the polymer is initiated by the presence of minimum amounts of moisture in the dried initial product. It is maintained by the formation of H_2O in the self-condensation of cyclopentanone and its condensation with amines and NH_3 . The end product of this condensation is an insoluble and nonfusible polymeric substance. There are 3 figures and 3 tables. The most important English-language references are: B. G. Achhammer, J. Appl. Chem., 1, 301, 1951; J. Research NBS, 46, 389, 1951; S. Straus, L. A. Wall. J. Research NBS, 60, 339, 1958; 63A, 1269, 1959; B. Kamerbeek, G. H. Kroes, W. Grolle, Thermal degradation of some polyamides. Report delivered at the Conference on Heat-resisting Polymers, September 1960, London.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental Organic Compounds AS USSR)

SUBMITTED: June 9, 1961

Card 2/2

ACCESSION NR: AP4032571

8/0190/64/006/004/0710/0715

AUTHORS: Chelnokova, G. N.; Rafikov, S. R.

TITLE: Chemical transformations of polymers. 16. High temperature destruction of polyenanthamide and polycapramide in a closed system

SOURCE: Vysokomolek. soyedin., v. 6, no. 4, 1964, 710-715

TOPIC TAGS: polymer, polyenanthamide, polycapramide, polyamide, thermal polyenanthamide decomposition, thermal polycapramide decomposition, amide bond hydrolysis, polyamide depolymerization, homolytic bond rupture, decomposition product, chromathermograph Kht 2M

ABSTRACT: A 45-60 g aliquot of semitechnical grade polyenanthamide (PEA) (mol. wt. 20 000) or of commercial grade polycapramide (PCA) (mol. wt. 18 000) contained in a test tube was placed in a 0.5-liter autoclave filled with nitrogen, and was heated for 4-5 hours at various temperatures. After cooling, the gaseous, liquid, and solid decomposition products were analyzed with the chromathermograph Kht-2M, the infrared spectrophotometer, by conductometric and potentiometric titration, etc. Heating the PEA at 350C yielded practically no gaseous products, but did

Card 1/3

ACCESSION NR: AP4032571

produce depolymerization from an initial viscosity (in cresol) of 1.5 to 0.4, the product remaining fully soluble. Heating the PEA at 370-380C brought about mainly the liberation of NH_3 and CO_2 and the formation of a polyamide with a molecular weight of 2600, of some lactams, nitriles, and pyrroles. Heating of either PEA or PCA at 390-420C resulted in a complete decomposition of the polyamide macromolecule, yielding 8-13% of ammonium carbonate and carbamides, a larger amount of gaseous products, some water (3%), other fluid destruction products, and 10-12% of a solid insoluble black mass. The latter was presumably a polycondensation product of earlier decomposition compounds. Infrared analysis of the liquid fraction showed the presence of CN and NH units. In the opinion of the authors, hydrolysis seems to be the dominant trend in thermal destruction of the polyamides, most of the water originating from secondary reactions. The desamination and decarboxylation of the end groups, and the homolytic rupture of various bonds are also involved in the processes of thermal destruction of the polymers. V. I. Yermakova participated in the experimental work and N. A. Chumayevskiy conducted the infrared analysis. Orig. art. has: 1 table, 2 charts, and 2 formulas.

Cord 2/3

ACCESSION NR: AP4032571

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR (Institute of Organoelemental Compounds, AN USSR)

SUBMITTED: 07May63

DATE ACQ: 11May64

ENCL: 00

SUB CODE: 00, MM

NO REF SOV: 003

OTHER: 001

Card 3/3

L 35467-65 EPF(c)/EWP(j)/EWT(m)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5003829

8/0190/65/007/001/0065/0069

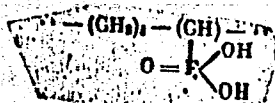
AUTHORS: Rafikov, S. R.; Chelnokova, G. N.; Yergebekov, M. Ya.; Yershova, T. V. 26 25

TITLE: Synthesis and study of polyalkylenephosphonic acids 7

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 1, 1965, 65-69

TOPIC TAGS: polyethylene, chlorophosphination, polymer

ABSTRACT: Oxidative chlorophosphination and the properties of polyalkylene-phosphonic (PAP) acids obtained by saponification of the products of oxidative chlorophosphination of high-pressure polyethylene containing 3-20% P were investigated. PCl_3 was added in portions to the polyethylene (at ≈ 60 C) while oxygen was passed through the bottom of the reactor. After a 2-hour hydrolysis of the reaction products, the chemical and thermomechanical properties of the products were investigated. It was found that the highest P content (20.5%) could be obtained by adding the PCl_3 in portions at a high oxygen flow rate (35-50 liter/hr). This PAP acid has the structure



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L 35467-65

ACCESSION NR: AP5003829

Polymers containing less than 13% P were found insoluble in water or brine but were soluble with more than 13% P. The effects of P concentration on the viscosity of PAP acid solutions were measured (see Fig. 1 on the Enclosure) and were found to be dependent on the aging time. Titration with KOH proceeded similarly to that of n-methylbenzylphosphonic acid (pH = 12 for 1.2 ml of 0.1 n KOH). The mechanical properties of PAP acids prepared at 1200 and 50 atm were found to be as follows: P = 0%, tensile strength = 130 kg/cm², elongation = 460%; 9%, 150 kg/cm², 250%; 14%, 250 kg/cm², 190%. The elasticity upon heating and the weight loss during heating to 3000 were found to decrease with increased P content.

The UV spectrum showed maximum absorption at 37 800 cm⁻¹, while the IR-spectra showed wide bands in the 1000-1200 and 2300-2380 cm⁻¹ regions. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: Institut elementoorganicheskikh soedineniy, AN SSSR (Institute of Organic Compounds, AN SSSR)

SUBMITTED: 03Mar64

ENCL: 01

SUB CODE: OC

NO REF SOV: 002

OTHER: 004

Card 2/3

L 35467-65

ACCESSION NR: AP5003829

ENCLOSURE: 01

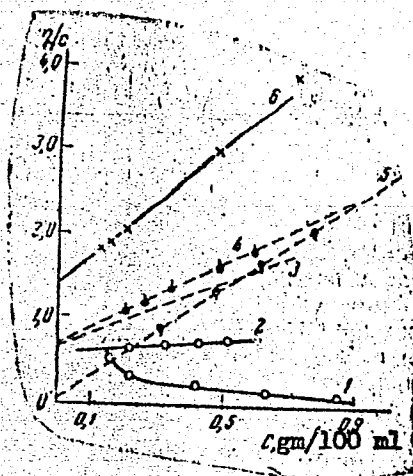


Fig. 1. Viscosity versus P concentration for PAP acid solutions
 1 - PAP acid, 14.5% P in H_2O ; 2 - same in 0.15 n KOH;
 3 - fresh PAP, 17% P in 0.15 n; 4 - same after 15 days;
 5 - same after 30 days; 6 - 16% P, in 0.15 n KOH

Card 3/3

L 48977-65 EWI(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5009662

UR/0062/65/000/003/0526/0527

AUTHOR: Rafikov, S. R., Yergebekov, M. Ye., Chelnokova, G. N., Yershova, T. V.

TITLE: Synthesis of oligomeric polymethylenephosphonic acids 7

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1965, 526-527

TOPIC TAGS: polymethylenephosphonic acid synthesis, oxidative chlorophosphonation, paraffin wax, cyclohexene, polymer crystallinity, infrared spectrum

ABSTRACT: A study was made of certain factors influencing the extent of the reaction of oxidative chlorophosphonation of paraffin waxes and the properties of the oligomeric polymethylenephosphonic acids obtained, containing various quantities of phosphonic acid groups in the molecule, were investigated. The reaction was carried out with paraffin wax of M.W. 500, PCl_3 , cyclohexene (as catalyst), and oxygen. The acid chloride formed was hydrolyzed, and polymethylenephosphonic acids with various contents of phosphorus in the molecule were obtained. X-ray analysis showed that the introduction of up to 4% phosphorus in the form of phosphonic acid groups into the wax decreases the crystallinity of the original substance only slightly, whereas polymers containing 7% phosphorus have almost no crystallinity, and samples containing 11% phosphorus and more are completely amorphous. The IR spectra showed broad bands at $2300\text{--}2400\text{ cm}^{-1}$, characteristic of OH groups linked to

Card 1/2

L 48977-65

ACCESSION NR: AP5009662

phosphorus, and at $960-1200\text{ cm}^{-1}$, characteristic of the groups
has: 1 table.

$\begin{matrix} \text{HO} \\ \diagup \text{P} \\ \text{HO} \end{matrix} = 0$. Orig. art.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute of Organometallic Compounds, Academy of Sciences, SSSR); Institut khimi-
cheskikh nauk Akademii nauk KazakhSSR (Institute of Chemical Sciences, Academy of
Sciences, Kazakh SSR)

SUBMITTED: 28Feb64

ENCL: 00

SUB CODE: OC, OC

NO REF SOV: 001

OTHER: 001

Card

2/2

L 2561-66 EWT(m)/EPF(c)/EWP(j)/T/ETC(m) WW/RM
 ACCESSION NR: AP5022609 UR/0190/65/007/009/1609/1613
 678.01:54+678.744 36
 AUTHORS: Rafikov, S. R.; Chelnokova, G. N.; Artemova, Yu. V. 39
 TITLE: Oxidative chlorophosphination of polyvinylacetate 7
 SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1609-1613
 TOPIC TAGS: phosphorus, phosphorus organic compound, polyvinylacetate, polymer, chlorophosphination 44.55
 ABSTRACT: The oxidative chlorophosphination of polyvinylacetate and the properties of its saponification products were investigated. The experimental procedure was similar to that reported by S. R. Rafikov, G. N. Chelnokova, M. E. Yergebekov, and T. V. Yershova (Vysokomolek. soyed., 7, 65, 1965). The composition and mechanical properties of chlorophosphinated polyvinylacetate and its saponification products are tabulated. The thermomechanical properties of polyvinyl (oxyacetoxy) phosphinic acids are shown graphically in Fig. 1 on the Enclosure. It was found that up to 12% phosphorus had been incorporated into polyvinylacetate by the reaction with phosphorus trichloride and oxygen. It is concluded that the phosphorus enters mainly into the principal chain of the polyvinylacetate. Orig. art.
 Card 1/3

L 2561-66

ACCESSION NR: AP5022609

has: 3 tables and 3 graphs.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute for Heteroorganic Compounds, AN SSSR) 44,55

SUBMITTED: 23Oct64

ENCL: 01

SUB CODE: MT, QC

NO REF SOV: 003

OTHER: 003

Card 2/3

L 2561-66

ACCESSION NR: AP5022609

ENCLOSURE: 01

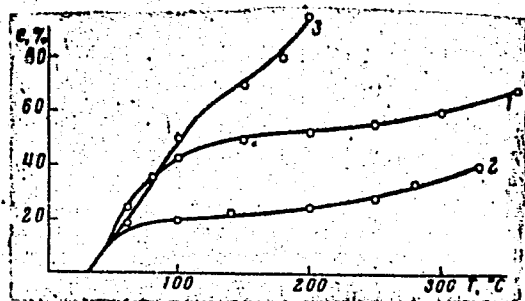


Fig. 1. Thermomechanical curves for compression of polyvinyl (oxyacetoxo) phosphinic acids:

1,2- polymers containing 2.5 and 7.0% phosphorus respectively; 3- polyvinyl-acetate

Card

3/3

RAFIKOV, S.R.; CHELNOKOVA, G.N.; ARTEMOVA, Yu.V.

Reaction of carbocyclic acid esters with phosphoryl chloride.
Zhur. ob. khim. 35 no.3:591 Mr '65. (MIRA 18:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

RAFIKOV, S.R.; CHELNOKOVA, G.N.; ARTEMOVA, Ye.V.

Oxidative chlorophosphination of polyvinyl acetate. Vysokom.
soed. 7 no.9:1609-1613 S '65. (MIRA 18-10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

L 29000-66 EWT(m)/EWP(j) RM	
ACC NR: AP6018839	SOURCE CODE: UR/0079/65/035/003/0591/0591
AUTHOR: Rafikov, S. R.; Chelnokova, G. N.; Artemova, Yu. V. 22 B	
ORG: <u>Institute of Heteroorganic compounds, AN SSSR</u> (Institut elementoorganicheskikh soedineniy AN SSSR)	
TITLE: Reaction of <u>carboxylic acid esters</u> with phosphorus oxychloride	
SOURCE: Zhurnal obshchey khimii, v. 35, no. 3, 1965, 591	
TOPIC TAGS: alkyl radical, chloride, phosphate, ester, phosphorus chloride	
ABSTRACT: Alkyl acetates react with phosphorus oxychloride to form <u>alkyl dichloro-phosphates</u> and acetylchloride. The reaction was investigated for butyl acetate and phosphorus oxychloride. The addition of phosphoric acid exerts an appreciable catalytic effect upon this reaction. Orig. art. has: 1 formula. [JPRS]	
SUB CODE: 07 / SUBM DATE: 22oct64	
Card 1/1 <i>BLG</i>	UDC: 547.29+546.185

USSR/Cultivated Plants - Ornamental.

14-11

Abs Jour : Ref Zhur - Biol., No 9, 1956, 39562

Author : Kokin, A.Ya., Chelnokova, I.V.

Inst : University of Petrozavodsk

Title : Some Methods to Accelerate Blossoming in Decorative Plants.

Orig Pub : Uch. zap. Petrozavodskogo un-ta, 1956 (1957), 7, No 3, 71-82.

Abstract : Experiments were conducted with *Matthiola odoratissima* Fall and summer chrysanthemums (*Chrysanthemum* L). It was found that the pre-sowing treatment of stock seeds with trace elements (boron, copper and manganese) accelerates the beginning of budding and blossoming. The best results are obtained with copper. The increased growth and development of stock under the influence of

Card 1/2

USSR/Cultivated Plants - Ornamental.

14-11

Abs Jour : Ref Zhur - Biol., No 9, 1956, 39562

trace elements is related to the increase in activity of physiological processes. The vernalization of seeds of summer chrysanthemums accelerates blossoming and makes it more intensive. -- H.S. Lebedeva

Card 2/2

- 176 -

CHELNOKOVA, L.M.

LAPSHIN, N.P.; CHELNOKOVA, L.M., inzhener; YEFIMOV, A.A., nachal'nik len-
techno-rovnichnogo tsokha; STERIN, L.I.; RATOY, N.S.; NOVIKOV, N.V.;
KABANOVA, Ye.V.; BASHKIR, A.F.; KLEYENKINA, L.G.; IVANOV, N.Ye.;
YUSHAKOV, A.N., inzhener.

Readers' efficiency suggestions. Tekst.prom.17 no.1:37-43 Ja '57.
(MLRA 10:2)

1. Fabrika "Krasnaya Talka (for Chelnokova). 2. Prepodavatel'
Morskanskogo tekstil'nogo tekhnika (for Sterin). 3. Nachal'-
nik otchel'nogo tsokha Shuyskoy ob'yedinennoy fabriki (for Iva-
nov).

(Textile industry)

ZHIVOPISTSEV, V.P.; CHELNOKOVA, M.N.

Antipyrine dyes as analytical reagents. Report No.1: Relation
between structure and reactivity of dyes. Zhur. anal. khim. 18
no.2:148-153 F '63. (MIRA 17:10)

1. Perm State University.

ZHIVOPISTSEV, V.P.; CHELNOKOVA, M.N.

Antipyrine dyes as analytical reagents. Report No.2: Photometric methods for the determination of cadmium. Zhur.anal.khim. 18 no.6:717-720 Je '63.
(MIRA 16:9)

1. A.M. Gorky Perm State University.
(Cadmium—Analysis) (Antipyrine)

KUZNETSOV, M.I.; UDALOV, Yu.F.; CHELNOKOVA, N.A. (Moskva)

Effect of vibrations on the metabolism of certain vitamins in
the human organism. Vop. pit. 18 no.3:14-17 My-Je '59. (MIRA 12:7)

(VITAMIN, metab.

eff. of vibrations (Rus))

(VIBRATIONS, effects,

on vitamin metab. (Rus))

UDALOV, Yu.F.; CHELNOKOVA, N.A.

Thiochrome method for the determination of vitamin B₁ in the urine.
Lab. delo 6 no.5:25-26 S-O '60. (MIRA 13:9)

1. Nauchno-issledovatel'skiy ispytatel'nyy institut aviatsionnoy
meditsiny, Moskva.

(THIOCHROME)

(THIAMINE)

(URINE—ANALYSIS AND PATHOLOGY)

UDALOV, Yu.F.; CHELNOKOVA, N.A.

Significance of determining the urinary excretion of 5-pyridoxic acid
in studying vitamin B₆ metabolism. Lab. delo 8 no.3:33-35 Mr '62.
(MIRA 15:5)

(PYRIDOXINE)

(ISONICOTINIC ACID)

ZAYKO, N.S.; KUZNETSOV, M.I.; CHEJNOKOVA, N.A.

Examination of the gustatory sensitivity in man during prolonged oxygen inhalation and an appropriate dietary regimen. Biul. eksp. biol. i med. 56 no.8:11-13 Ag '63. (MIRA 17:7)

1. Iz laboratorii fiziologii i patologii organov chuvstv (zav. - prof. P.G. Snyakin) Instituta normal'noy i patologicheskoy fiziologii (direktor - deystvitel'nyy chlen AMN SSSR prof. V.V. Parin) AMN SSSR, Moskva. Predstavleno deystvitel'nyy chlenom AMN SSSR V.V. Parinye.

CHELNOKOV, N.M., kand.tekhn.nauk; P.imali uchastiye: RAZORENOVA, N.I.;
CHIRKOV, M.T.

Welding in the manufacture of ignition coils. Svar.proisv. no.1:
32 Ja '62. (MIRA 15:3)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (for
Chelnokov, Chirkov). 2. Zavod avtotraktornogo elektrooborudovaniya
No.2 (for Razorenova).

(Electric coils--Welding)

CHEL'NYI, A.M.; TITOVA, V.S.; ZLATKINA, S.A.

Prevention of staphylococcal diseases in mothers and newborn infants by means of immunization with a purified sorbed staphylococcal anatoxin. Zhur. mikrobiol., epid. i immun. 32 no.9:27-30 S '61. (MIRA 15:2)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR, Taldomskoy bol'nitsy i Verbilkovskoy uchastkovoy bol'nitsy Moskovskoy oblasti.

(STAPHYLOGOCCAL DISEASE)
(INFANT (NEWBORN))

(VACCINATION)
(PREGNANCY)

KUSHNAREV, V.M.; CHEL'NIY, A.M.

Pyrogenicity of sera and methods of its determination. Nauch. ozn.
preisv. bakt. prep. 10:213-219 '61. (MIRA 18:7)

1. Institut epidemiologii i mikrobiologii im. Gamalei AMN SSSR.

CHELO, Burkhan: Master Agric Sci (diss) -- "The effect of potash-phosphorus feeding and sowing times on increasing the resistance of wheat to brown rust". Moscow, 1959. 24 pp (Moscow Order of Lenin Agric Acad im K. A. Timiryazev), 110 copies (KL, No 18, 1959, 127)

CHELO, Burkhan, aspirant

Experiments with leaf rust resistant winter wheat varieties in
Albania. Zashch.rast.ot vred. i bol. 4 no.1:51-52 Ja-P '59.
(MIRA 12:2)

1. Kafedra sel'skokhozyaystvennoy fitopatologii Akademii sel'-
skokhozyaystvennykh nauk im. Timiryazeva.
(Albania--Leaf rust of wheat)

YAKUBOVICH, A.Ya.; SOLOVOVA, O.P.; DUBOV, S.S.; CHELOBOV, F.N.; STEPANOV-
SKAYA, N.N.; GINSBURG, V.A.

Structure and polymerization of compounds containing a trifluoro-
vinyl group. Zhur. VkhO 6 no.6:709-711 '61. (MIRA 14:12)
(Vinyl compound polymers)

DUBOV, S. S.; CHELOBOV, F. N.; STERLIN, R. N.

Mass spectrometric study of some vinyl and perfluorovinyl compounds. Zhur. VKHO 7 no.5:585 '62. (MIRA 15:10)

(Vinyl compounds—Spectra)

L 14349-63

EPR/EWP(j)/KPF(c)/EWT(m)/BDS Ps-4/Ps-4/Pr-4 RM/WW/MAY

ACCESSION NR: AP3003861

S/0020/63/151/003/0631/0633 1/29

AUTHORS: Chelobov, F. N.; Dubov, S. S.; Tikhomirov, M. V.; Dobrovitskiy, M. I.

TITLE: Ionization and dissociation of hexafluoropropylene by electrons at varying energy

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 631-633

TOPIC TAGS: ionization, hexafluoropropylene, electron, MS-2 mass-spectrometer

ABSTRACT: Authors give results of destructive ionization of hexafluoropropylene, which was accomplished on a MS-2 mass spectrometer, having accelerating voltage of 2500V. The energy of electron beam was in range from 10 to 70 ev. Observations have shown that the molecular ions $C_3H_6^+$ begin to appear at a potential of 10.3 ev, while the ions originating from splitting of the molecular ions appear in the following sequence: $C_2F_4^+$ at 12.5 ev; $C_2F_5^+$ at 14.8 ev; CF_3 at 15.0 ev; and $C_2F_3^+$ at 16.1 ev. It is difficult to admit that the ions $C_2F_3^+$ were produced by rupture of the C-C bond instead of C-C, therefore the appearance of these ions especially at a comparatively low potential is explained by ionization of the C-F bond of the CF_3 group and migration of the F^+ ion into the CF_2 group. Formulation of CF_3^+ apparently is originated not only from dissociation of $C_3F_6^+$

Card 1/2

L 14349-63

ACCESSION NR: AP3003861

2

but also from $C_3F_5^+$ and $C_2H_4^+$. Proposed mechanism of destructive ionization is specific only for fluoro-carbon compounds since destructive ionization of Ethylene and propylene proceeds differently. "Authors express deep thanks to N. N. Tunitskiy for his help in this work, and to A. I. Skobina for preparing the samples." Orig. art. has: 2 tables and 1 figure.

ASSOCIATION: none

SUBMITTED: 01Apr63

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: PH, CH

NO REF SOV: 001

OTHER: 004

2/2,

Card

L 17727-63

RM/WW

EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Ps-4/Pc-4/Pr-4

ACCESSION NR: AP3004059

S/0076/63/037/007/1500/1503

AUTHORS: Chelobov, F. N.; Dubov, S. S.; Tikhomirov, M. V.

TITLE: Ionization and dissociation of ethylene and tetrafluoroethylene by elements with varying energies

SOURCE: Zhurnal fizicheskoy khimii, v. 37, no. 7, 1963, 1500-1503

TOPIC TAGS: ethylene, tetrafluoroethylene, mass spectrometry, Fahl method

ABSTRACT: The dependence of ethylene and tetrafluoroethylene mass spectra upon the ionizing electron energies has been investigated. The investigation was carried out in a range of 10 to 70 ev. A possible mechanism has been proposed for the dissociative ionization of these molecules. It was established on the basis of intensity comparison of analogous ions of both substances that a number of features of mass spectra can be explained on the basis of the proposed varying distribution of charges in molecular ions. A comparative evaluation has been made of the effect of the ionizing electron energies upon the stability of molecular ions based on Fahl's method and upon the strength of C-C bond of ethylene and tetrafluoroethylene. The ionization of ethylene molecule occurs at the C-C bond with participation of Pi electrons which should lead to the formation of an

Card 1/2

L 17727-63

ACCESSION NR: AP3004059

2

ion with a symmetric charge distribution and an equal effect on the strength of all C-H bonds. Ionization of the tetrafluoroethylene molecule apparently occurs predominantly in the region of the C-F bond which leads to an ion with asymmetric distribution of the charge. This results in the weakening of one C-F bond, permitting the formation of ions with three fluorine atoms and increasing the possibility of migration of the weakly bound fluorine atom. "The authors express their gratitude to N. N. Tunitskiy for his help and to M. V. Gur'yev for important remarks during the evaluation of results." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 15Jun62

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: CH

NO REF SOV: 000

OTHER: 005

Card 2/2

CHELOBOV, F.N.; DUBOV, S.S.; TIKHOMIROV, M.V.; GITEL', P.O.; YAKUBOVICH, A.Ya.

Ionization and dissociation during an electron impact of α -fluoro
nitriles with a growing alkyl chain. Zhur.ob.khim. 34 no.2:571-575
F '64. (MIRA 17:3)

L 34129-66 ENT(m)/ENP(j)/T IJP(c) RM

ACC NR: AP6025541

SOURCE CODE: UR/0079/66/036/001/0163/0164

AUTHOR: Yakubovich, A. Ya.; Gitel', P. O.; Lagutina, Z. N.; Chalobov, F. N.

ORG: none

TITLE: Unusual adduct of trifluoronitrosomethane, tetrafluoroethylene, and phosphorus trichloride

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 163-164

TOPIC TAGS: phosphorus chloride, chemical compound, molecular weight, solvent action, copolymerization, mass spectrum, spectrum analysis

ABSTRACT: The reaction of trifluoronitrosomethane with tetrafluoroethylene in the presence of phosphorus trichloride yielded an unusual three-component adduct with the composition $C_2F_2 \cdot PCl_3 \cdot 2CF_3NO$. This adduct is thermally stable and behaves as an individual compound, with a distinct boiling point and molecular weight; it dissolves in a number of organic solvents without change, does not react with oxidizing agents (halogens), and does not liberate molecular iodine from an acidified solution of KI. It reacts readily with nucleophilic agents such as water, alcohols, and amines. When the adduct is treated with methanol in the cold, a product with composition $2CF_3NO \cdot C_2F_4 \cdot P(OCH_3)_3$ is isolated. The chemical properties of the adduct

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UDC: 547.89

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ACC NR: AP6025541

contradict the hypothesis of a radical mechanism of the copolymerization¹ of CF_3NO with C_2F_4 in the presence of PCl_3 , supporting the idea of a unique termination of the copolymerization, occurring at the very beginning of the process and accompanied by oxidation of trivalent phosphorus to the pentavalent form. A complete reaction mechanism and structure of the adduct are proposed. The chemical data on the structure of the adduct are confirmed by the results of mass spectral measurements. [JPRS: 35,998]

SUB CODE: 07, 20 / SUBM DATE: 08Jul65 / ORIG REF: 001 / OTH REF: 003

Card 2/2

USSR/Chemistry - Plastics CHELOBOV, IV. A.

FD-1549

Card 1/1 : Pub. 50-6/25

Author : Chelobov, N. A., Cand Tech Sci; Osipova, M. P.

Title : ~~Determination of the pressure of the plastic in the casting machine~~

Periodical : Khim. prom., No 8, pp 477-79 (29-31), Dec 1954 (1955?)

Abstract : Describes the technique of measuring pressures by means of membranes and strain gages mounted within the injector and mold of experimental casting machines. Discuss the significance of data obtained in this manner in the case of polystyrene cast at 180°C.

Institution : Scientific Research and Planning Institute of Plastics

Submitted :

25(1)

PHASE I BOOK EXPLOITATION

SOV/2567

Chelobov, Nikolay Alekseyevich [Deceased]; Petr Grigor'yevich Petrukha; Vladimir Georgiyevich Bovin; Mikhail Antonovich Myakishev; and Tat'yana L'vovna Buyanova

Rukovodstvo k laboratornym rabotam po kursu "Metallorezhushchiye stanki" (Laboratory Manual for the Course in "Metal-cutting Machine Tools") Moscow, Oborongiz, 1959. 142 p. (Series: Moscow. Aviatsonnyy institut imeni Sergo Ordzhonikidze) Errata slip inserted. 16,000 copies printed.

Ed. of Publishing House: I.A. Suvorova; Tech. Ed.: V.P. Rozhin.

PURPOSE: This book is intended for students of all specialties at the Moscow Order of Lenin Aviation Institute imeni Sergo Ordzhonikidze as an aid to laboratory work.

COVERAGE: This book contains a description of laboratory work for the course entitled "Metal-cutting Machine Tools" under the department of "Machining, Machine Tools and Instruments."

Card 1/4

Laboratory Manual (Cont.)

SOV/2567

In the laboratory work students are acquainted with design, set-up and testing of machine tools, and are trained in experimentation. Diagrams of eleven types of machine tools and of some of their components are given. No personalities are mentioned. There are 17 Soviet references.

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Laboratory Manual (Cont.)

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Laboratory Manual (Cont.)

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AVAILABLE: Library of Congress

Card 4/4

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12-1-59

MANSHILIN, V.V.; AGAFONOV, A.V.; MANAKOV, N.Kh.; VASILENKO, V.P.;
MASLOV, I.Ya.; KNYAZEV, V.S.; STEPANENKO, I.A.; Prinimali
uchastiye: VAYL', Yu.K.; NEMETS, L.L.; BELOUSOVA, I.V.;
STOLIARENKO, Ye.G.; YEMEL'YANOV, A.A.; RYABOV, V.M.;
BEREZOVSKIY, V.D.; ZEFIROVA, Ye.G.; CHELOGUZOVA, Ye.F.;
SOLOTSINSKIY, S.Ye.; BOL'SHAKOVA, K.A.; KHRAMOV, A.Ye.

Catalytic cracking of raw heavy distillates on a microspheric
catalyst of Troshkovskiy clay. Khim. i tekh. topl. i masel. 8
no.3:1-6 Mr '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke
nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Cracking process) (Catalysts)

Chelokhsayev, L.S.

137-58-5-9324

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 76 (USSR)

AUTHORS: Manchenko, L.V., Chelokhsayev, L.S., Chirkova, N.P.

TITLE: Thallium Distribution in the Dust Collecting System of a Lead Plant (Raspredeleniye talliya po tsekhu pileulavlivaniya svint-sovogo zavoda)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 11-12, pp 51-53

ABSTRACT: Tl losses, as well as the distribution of this element in the dust-collecting system, were investigated. It was established that total Tl losses throughout the dust-collecting section of a lead plant may attain 24.9%, but that they can be reduced by one-half by means of extracting Tl from the drain water and by discontinuing the practice of discharging gases into the atmosphere without preliminary purification. It is essential that roasted dust from electrofilters be systematically processed in the cadmium shop. This will sharply increase the proportion of Tl in the finished products.

G.S.

Card 1/1

1. Thallium--Determination
2. Thallium--Separation
3. Lead--Production